IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. No:	09/557,418
Applicant:	Bernard Trevor Matthews et al.
Filed:	April 21, 2000
Title:	A NOVEL COOKED SAUSAGE AND A METHOD FOR MAKING THE SAME
T.C./A.U.:	1761
Examiner:	Arthur L. Corbin
Confirmation No.:	6763
Docket No.:	FJC 102US

DECLARATION OF PETER E. ROBERTS UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

I, Peter Elwyn Roberts, of 21 Farm View, North Walsham, Norfolk NR28 9UY, United Kingdom hereby declare that:

Introduction

1. I am employed by Bernard Matthews Plc (hereinafter referred to as "my Company") as General Manager Product Development, a position I have held since December 1991. Previously, I was employed by Dalepak Foods Ltd as Product Development Manager, a position I held for eight years. The information contained in this declaration is within my own knowledge or belief or is taken from books and records of my Company to which I have full and free access.

2. Exhibit 1 is a copy of my *Curriculum Vitae* from which it will be seen that I have an honours degree in Biochemistry and a Masters degree in Food Science and Technology. I have worked in the food industry for about twenty-one years. In particular it will be seen that I have over twenty years' experience in the processed meat industry. Whilst at my Company, I have been responsible for the development of new processed meat products.

3. I am not an inventor of the invention which is the subject of the above-identified application.

4. I have reviewed the application and understand that claims 1 - 5, 7 - 24, 26, 28 - 32, and 34 - 53 are currently pending in the application. All of the claims now pending in the application recite at least the following features: a meat mixture having a pH of about 5.5 or

more, wherein the mixture includes 10 to 40% by weight of a fermented milk product or a mild yoghurt.

5. It is desirable to achieve a low calorie cooked sausage product. It is also desirable to achieve a cooked sausage product with reduced moisture loss upon cooking (cook loss). However, the addition of significant quantities of an additive such as yoghurt or other fermented milk products to achieve a low calorie product leads to undesired cook loss.

6. Providing a low calorie cooked sausage product therefore represents competing interests, i.e., 1) adding significant quantities of an additive such as a fermented milk product to a meat mixture to achieve a low calorie cooked sausage product, and 2) avoiding the undesired cook loss associated with added quantities of fermented milk product.

The Invention

7. The inventors discovered, however, that setting a minimum pH limit of the mixture of meat emulsion and fermented milk product at about 5.5 or more while adding 10 to 40% by weight of the fermented milk product provides a reduced calorie meat product with reduced cook loss, as described at page 5, lines 8 - 12 of the application.

8. Additionally, as described in the application at page 5, lines 12 - 16, if the pH of the mixture falls below the lower pH limit of about 5.5 and approaches the isoelectric point (about 5.0 to 5.2) of the meat, the water-retaining capacity of the meat is reduced, with the result that the juiciness and texture of the final product is impaired.

9. By selecting the characteristics and quantities of ingredients so as not to reduce the pH of the meat mixture below the lower limit of about 5.5, the emulsion retains its water binding properties to ensure that a sausage is produced that is desirably juicy and has attractive organoleptic quality.

Testing

10. Cook loss tests were conducted by my Company during April 2004, under my direction, for meat mixtures below and above the lower pH limit of about 5.5.

11. Results of the tests are provided in enclosed Exhibits 2 - 4. Specifically, meat mixtures having a range of pH values were prepared as samples and cooked to determine cook loss. Exhibit 2 provides a table showing the pH values of the yoghurt, meat mixture, and cooked product for each sample; a chart of the pH values; and a chart of cook loss. Exhibit 3 provides tables of data for Sample No. 1 and Sample No. 7. Exhibit 4 provides a table of data for Sample Nos. 2 to 6. Each mixture of Sample Nos. 1 to 7 included about 23% by weight of yoghurt.

12. Sample No. 1 (highlighted in yellow on Exhibit 2) corresponds to the average (highlighted in yellow on Exhibit 3) of three meat mixture samples illustrated in Exhibit 3 under "Low pH Yoghurt" (explained in greater detail below). With reference to Sample No. 1 of Exhibit 2, the average mixture pH level is 5.29, which is slightly below the claimed lower pH limit of about 5.5. To determine cook loss for Sample No. 1, a batch of the three (3) mixtures under "Low pH Yoghurt" of Exhibit 3 was weighed as a whole before and after cooking. The cook loss of Sample No. 1 was an undesirable 10% as shown on Exhibits 2 and 3.

13. Referring to Sample No. 2, the pH level of the mixture is 5.61 (Exhibits 2 and 4), which is slightly greater than the claimed lower pH limit of about 5.5. In sharp contrast to Sample No. 1, however, the cook loss of Sample No. 2 is surprisingly reduced to 1.42%. In other words, cook loss is sharply reduced when the pH of the mixture is about 5.5 or more (in this case, 5.61 for Sample No. 2) as compared to a mixture having a pH just below that value (in this case, an average pH of 5.29 for Sample No. 1).

14. Exhibit 3 also shows average pH values of three (3) samples of meat mixtures and their corresponding average cook loss values under "Higher pH Yoghurt," and this average is shown as Sample No. 7 on Exhibit 2. In sharp contrast to the 10% cook loss for Sample No. 1, when the pH level of the mixture is an average of 5.93 (highlighted in blue) in Sample No. 7, which is greater than the claimed lower pH limit of about 5.5, the average cook loss is a desirable 0%.

15. Exhibit 5 is a photograph comparing a standard mild yoghurt sausage product (i.e., one that is currently prepared with a mixture pH of about 5.5 or more and 10-40% by weight of mild yoghurt by the Company) with a sour yoghurt sausage product (i.e., one that is prepared with a lower mixture pH due to the sour yoghurt ingredient). As shown, the standard sausage product exhibits a high quality, gelled structure, indicative of moisture retention. Furthermore, the stripped surface of the standard sample is smooth, with no excess moisture, which provides further evidence of reduced cook loss (approximately 0%). In contrast, the sour yoghurt sausage product fails to exhibit a high quality, gelled structure. More specifically, the stripped surface of the sour yoghurt sample is rough, with a sheen of moisture, indicative of excess cook loss (approximately 10%). Furthermore, the cross-sectional sliced surface of the sour yoghurt sample is ruffled, which provides further evidence of undesirable cook loss.

16. The test results show that cook loss of a meat mixture including 10 - 40% of a fermented milk product or a mild yoghurt is sharply reduced when the pH of the mixture is about 5.5 or more as opposed to a pH just below that value. The dramatic reduction in cook loss demonstrated by these tests results was unexpected in that the relatively small range of pH

values for the mixture just above and below about 5.5 would result in such large differences in cook loss. The test results in Exhibits 2 - 5 demonstrate the benefits achieved as a result of the claimed feature of a mixture having a pH of about 5.5 or more.

Prior Art Rejections

17. I understand that the Office Action dated October 31, 2003, rejected claims 1 - 5, 7, 10 - 24, 26, 28, 31, 32, and 34 - 47 as being obvious based on Japanese Patent No. 07-107941 to Minoru et al. ("Minoru") in view of U.S. Patent No. 4,362,750 to Swartz ("Swartz"). I have read these patents, and am familiar with their contents.

18. I understand that Minoru was relied upon for the rejection of the claims because Minoru discloses 10% fermented dairy product.

19. Minoru is silent about the sausage product pH, as correctly acknowledged in the Office Action.

20. As correctly acknowledged in the Office Action, Minoru specifically discourages the addition of more than 10% by weight of fermented dairy product, explaining that the meat exudes a strong raw fermented smell coming from the fermented dairy product, making it unpleasant. Paragraph 0014. Furthermore, each of the examples provided includes amounts of fermented milk product significantly less than 10%.

21. In contrast to an objective of retaining moisture in a low calorie cooked sausage product, the problem Minoru sought to overcome was that associated with producing a fermented (i.e., uncooked) meat product utilizing a relatively low curing and aging temperature (5 - 10°C), as described in paragraph 0005 of Minoru. Conventional bacteria and yeast materials in processed meat products are stated in Minoru to be utilized in the U.S. and Europe to improve the quality of the product and shorten the aging period. Paragraph 0005. However, these meat products are fermented and aged at medium-high temperatures of 25 - 37°C according to Minoru. Paragraph 0005. In Japan, production is stated in Minoru to be premised on low-temperature (5 - 10°C) curing and aging, which makes the use of such microorganisms difficult. Paragraph 0005.

22. Even if one modified the fermented product of Minoru by adding substantially more fermented milk product (contrary to the teaching of Minoru against adding more than 10%), and even if one cooked the product of Minoru instead of fermenting it, Minoru offers no guidance regarding how to control cook loss and fails to suggest the claimed lower pH limit of about 5.5.

23. I understand that Swartz was relied upon for the rejection of the claims because Swartz seeks to alter the taste of a sausage product by including yoghurt therein.

24. In further contrast to the objective of retaining moisture, and in contrast to Minoru's objective to produce a fermented meat product utilizing a relatively low curing and aging temperature, Swartz seeks to alter the taste of sausage by the inclusion in the sausage of a cultured dairy product, as described at column 2, lines 38 - 42 of Swartz. By the use of the cultured dairy product as a flavoring material, the sausage is given an instant tangy flavor without the normal 12 to 24 hours of fermentation typically needed to accomplish the same result. Column 2, lines 43 - 47. The amount of cultured dairy product added depends upon the desired flavor. However, Swartz teaches an amount of only 2% to 8% based on the weight of the meat. Column 5, lines 38 - 47. Examples 2 and 3 of Swartz teach the addition of a cultured dairy product in amounts of 4.5% and 3.3% respectively. Column 7, lines 12 and 56.

25. Like Minoru, Swartz is completely silent with respect to an overall pH of the meat mixture. Swartz adds yoghurt strictly as a flavor enhancer, and Swartz does not suggest the claimed lower pH limit of about 5.5 or more for the meat mixture.

26. With respect to the claimed feature of the mixture comprising 10 to 40% by weight of fermented milk product, Swartz is silent with respect to an amount of mild yoghurt of 10 - 40% weight. In fact, Swartz's cultured dairy product parameters of 2 - 8% by weight discourages one from the claimed range of 10 - 40%.

27. Accordingly, neither Minoru nor Swartz suggest a lower pH limit for the meat mixture of about 5.5. Furthermore, Swartz discourages one from the claimed range of 10 - 40% by weight of fermented milk product, and Minoru discourages one from using more than 10% by weight of fermented milk product.

28. Because of the different objectives of Swartz and Minoru (which also differ from the inventors' objective of reducing cook loss), and because Swartz discourages one from using more than 2 - 8% by weight of cultured dairy product, I would not be motivated to combine Minoru and Swartz to reduce cook loss. And even if I were to combine the teachings of Minoru and Swartz, I would nevertheless be left without any suggestion to set a lower pH limit for the meat mixture of about 5.5.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the likes so made are punishable by fine, or imprisonment, or both under § 1001 Title 18 of the U.S. Code and that such willful false statements may jeopardize the validity of the above-identified application or any patent issued thereon.

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FJC-102US

12/5/04

Date

Peter Elwyn Roberts

CURRICULUM VITAE OF PETER ELYWN ROBERTS

NAME: Peter Elwyn Roberts

DOB: 15 December 1959

NATIONALITY: British

ADDRESS: 21 Farm View
North Walsham
Norfolk
NR28 9UY

QUALIFICATIONS:

1978	3 'A' levels:.Biology, Chemistry, Physics
1978-81	BSc Hons degree – Biochemistry, UMIST
1981-82	MSc – Food Science and Technology, Leeds University

PROFESSIONAL QUALIFICATIONS:

(i) Member of the Institute of Food Science & Technology

(ii) Member of the Association of Food Developers

EMPLOYMENT HISTORY:

1991 – TO DATE: **Bernard Matthews plc**

General Manager Product Development – for primarily UK retail / food service sector

Product portfolio

Development of food products within the following markets

(1) Frozen, added-value, formed, shaped and whole muscle products using turkey, chicken, vegetables, lamb, pork and fish as a base raw material. Various food awards from retail/food service sectors

(2) Fresh, added-value, formed, shaped and whole muscle products accommodating turkey, chicken as base raw materials. Sauce development, primarily for this sector

(3) Cooked, sliced meats – prepacked (MAP), "Deli" cooked meat products accommodating reformed and whole muscle raw materials based upon turkey,

Exhibit 1

chicken and pork

(4) Ready meals – meal accompaniments

(5) Fresh, short-life – sandwich products

1983 – 1991: **Dalepak Foods (Northern Foods plc)**

Product Development Manager

Development of following product types:

(1) Comminuted, frozen grillsteaks and burgers using beef, lamb, chicken, pork, turkey and vegetables as a raw material base

(2) Ready-to-bake, frozen pies and sausage rolls

(3) Frozen "Readymeals"

(4) Chilled quiches and flans

(5) Frozen pizzas

1982 – 1983: **Dornay Foods (Now Master Foods – Mars Group)**

Development Technologist

Product portfolio

(1) Ambient, stable, pouched potato chips

(2) Dehydrated potato powder

PATENTS: US patents nos. 5,928,705 (13 Nov 1996) 5,887,415 (30 Mar 1990)
European patent applications nos. 0,741,973 (13 Nov 1996) 0,876,896 (11 Nov 1998)

AWARDS:

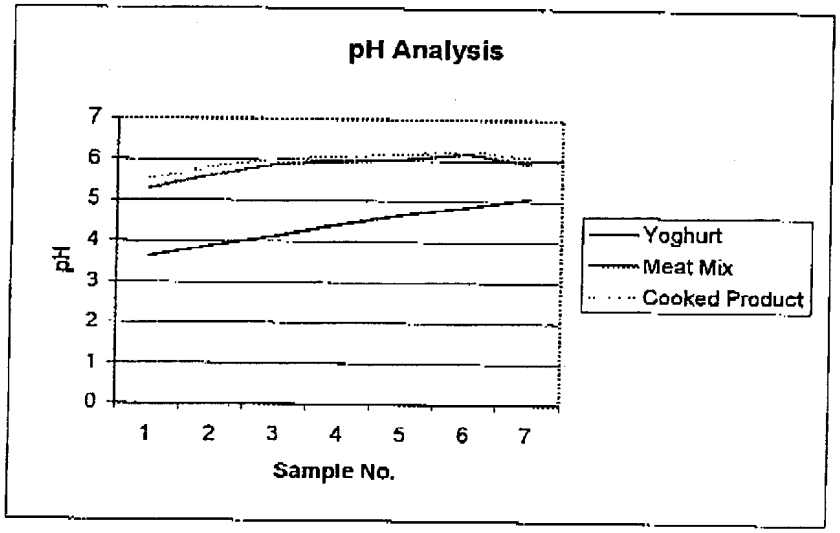
1988 British Frozen Food Federation Gold Award – Best new vegetable-based product ("Vegetable Grill")

1990 Food Processing Awards ("Ratatouille Vegetable Grill")

1991 Special Award from CEO Dalepak Foods plc PE Roberts – For his outstanding contribution to the company (First ever award given by company)

1993 British Frozen Food Federation Gold Award – Best

Sample No.	Yoghurt	Meat Mix	Cooked Product	Cook Loss
1	3.63	5.29	5.51	10
2	3.91	5.61	5.83	1.42
3	4.14	5.9	6.03	0.21
4	4.43	5.98	6.11	0
5	4.68	6.03	6.15	0
6	4.86	6.17	6.25	0
7	5.07	[illegible]	6.09	0



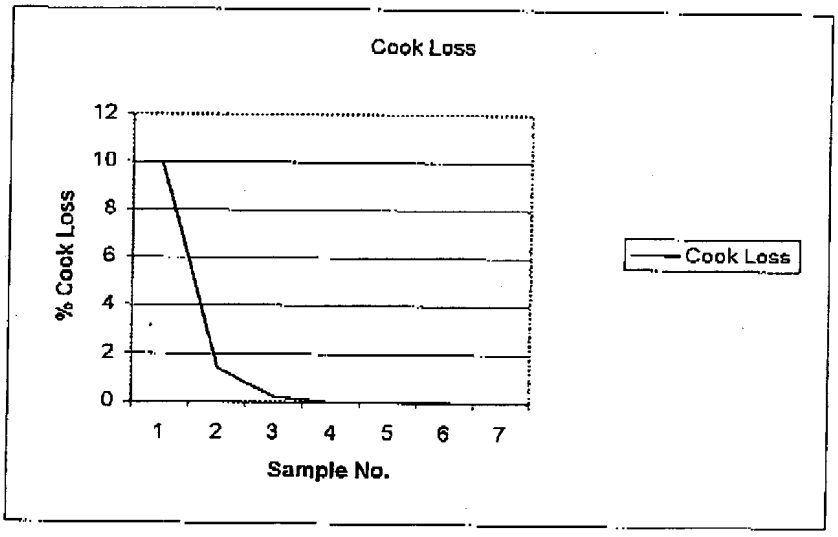


Exhibit 2

Cooked Sausage Products (Puten Fleischwurst mit Joghurt Kal. 45)

	Low pH Yoghurt				Higher pH Yoghurt			
	1	2	3	average	1	2	3	average
pH of Yoghurt	3.6	3.7	3.6	3.63	5.0	5.1	5.1	5.07
ph Wert of Sausage Mix Uncooked	5.29	5.29	5.28	5.29	5.92	5.94	5.93	5.93
pH of Sausage Mix cooked	5.52	5.51	5.5	5.51	6.10	6.09	6.08	6.09
cook loss	10%				0%			

Raw Turkey Breast Steaks Marinaded

	Higher pH Yoghurt			
	1	2	3	average
pH of Yoghurt used specifically for raw meat	3.6	3.7	3.6	3.63
pH of Breast Meat	5.6	5.7	5.8	5.7
pH of marinade eg Rap's type	4.2			
pH of Finished Product	4.97	5.19	5.37	5.18

Exhibit 3

END PRODUCT

pH Joghurt	pH Fleisch frisch	pH Brät	pH Produkt gekocht	BEFFE	P Zahl	Verlust im Endprodukt
	pH Meat	pH meat mix	pH cooked product	Lactitc acid content	P 205 value	Cook losses
3.91	6.25	5.61	5.83			1.42%
4.14	6.25	5.90	6.03			0.21%
4.43	6.25	5.98	6.11			0%
4.68	6.25	6.03	6.15			0%
4.86	6.25	6.17	6.25			0%

Exhibit 4

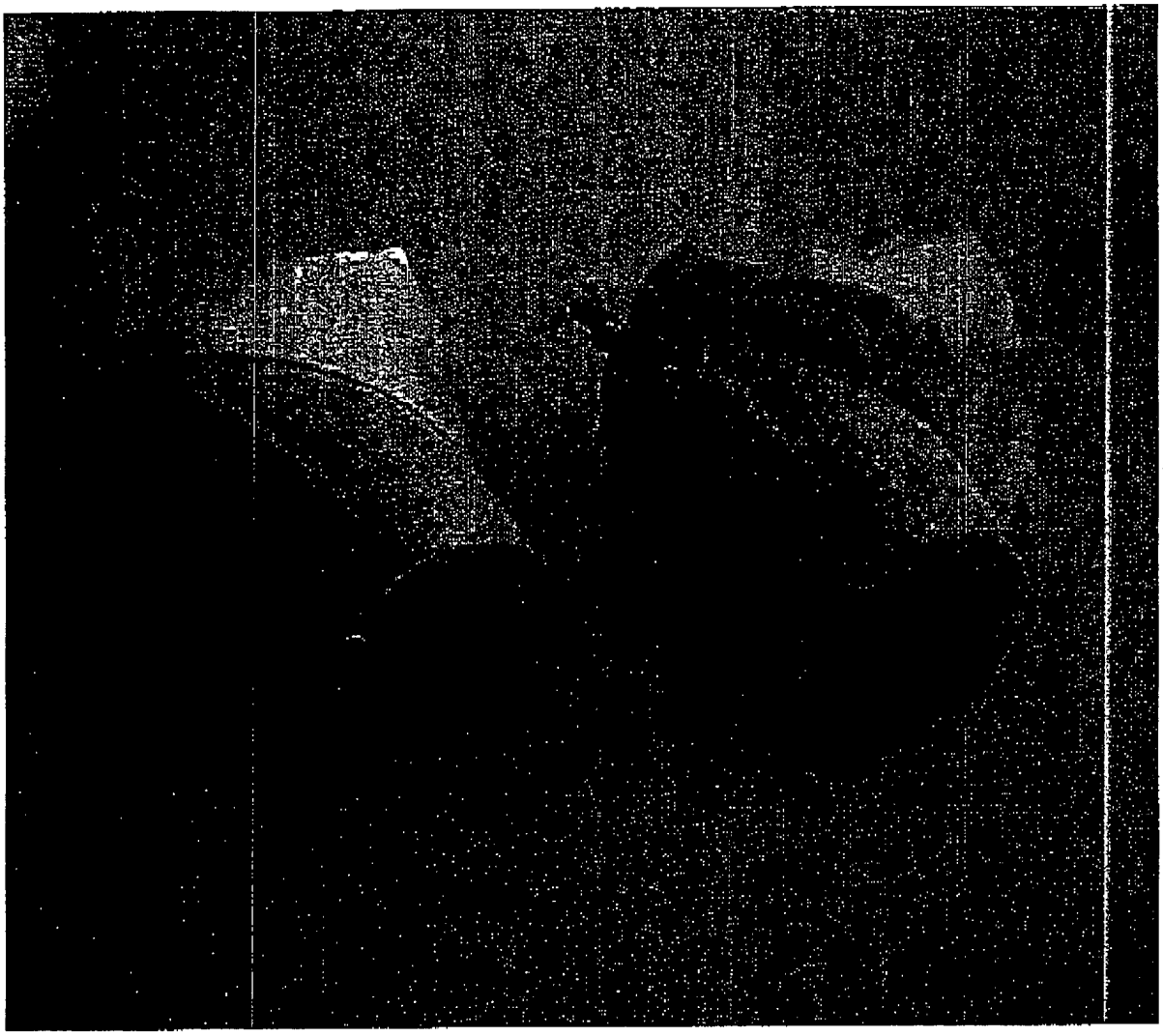


Exhibit 5